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AMERICAN CHEMICAL SOCIETY.

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The **Journal of the American Chemical Society** appears monthly, except during July and August. It will contain all papers read before the Society, as well as abstracts from American and Foreign Journals, and a list of American Patents relating to Chemical Industries.

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The Meeting Room and Library of the Society are at Room 1, University Building, Washington Square, New York.

The Regular Monthly Meeting is held on the first Friday of every month, at 8 P. M. A *Conversazione* is held on the third Friday of every month, at the same hour.

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The Committee on Papers and Publications respectfully call attention to the resolutions of the Society, requiring that papers be submitted to the Committee before being read.

Members who cannot be present at the meetings, are requested to send their papers in care of the Committee, who can guarantee prompt publication of all articles accepted.

Authors will be furnished, gratis, with 20 reprints of each article published in the Journal, if application for the same be made when the article is sent.

Members are requested to notify the Committee of any change of address, or failure in the delivery of the Journal. All communications relating to the Journal should be addressed in care of

A. A. BRENEMAN, 97 Water St., New York.

PROCEEDINGS OF THE AMERICAN CHEMICAL SOCIETY.

Regular Meeting, Friday June 6th, 1884.

The minutes of the May meeting were read and approved. The minutes of the meeting of the Board of Directors, held May 29th were read. The following new members were elected:

Richard Linke, 345 East 18th street, New York City, proposed by James H. Stebbins, Jr., Wm. Rupp, A. R. Leeds.

Arthur S. Greene, Ann Arbor, Michigan, proposed by A. R. Prescott, P. Casamajor, H. Endemann.

Dr. H. M. Baker, 87 Ross street, Brooklyn, N. Y., proposed by P. Casamajor, H. Endemann, N. Alsberg.

As an associate member, Charles A. Heinitsh, Lancaster, Pa., proposed by A. A. Breneman, A. R. Leeds, W. Rupp.

Professor A. W. Hofmann, of Berlin, Prussia, and M. M. E. Chevreul, of Paris, were elected honorary members.

The following papers were then read:

Note on the Examination of Snow Water, by Elwyn Waller.

Discussion by the Chair and others.

On Method for the Assay of Indigo, by Charles Tennant Lee.

Discussion by Mr. Rau, who objected to this method, because indirubine sublimes at a lower temperature than indigotine.

On an Analysis of Slag from Ignited Garbage, by C. E. Munsell.

Discussion by Messrs. Breneman, Casamajor, Endemann and the Chair.

The subject of commercial testing of soda and acetic acid was introduced.

After some discussion it was moved—

"That a committee of five be appointed by the Chair to consider the subject of unform commercial tests for soda and acetic acid, and report to the Society at the September meeting; said committee to have power to fill vacancies." Carried.

Messrs. Habirshaw, Breneman, Alsberg, Leeds and Endemann were appointed on this committee.

The meeting then adjourned until Friday, September 19th, 1884.

C. E. Munsell,
Recording Secretary.

ADDITIONS TO THE LIBRARY,

DURING MAY, 1884.

From the Department of Agriculture, Washington, D. C.:
"Report for 1883."

From the Bureau of Statistics, Washington, D. C.:
"Internal Commerce of the United States, 1882."

From the American Institute of Mining Engineers:

C. A. Stetefeldt.: "Russel's Improved Process for the Lixiviation of Silver Ores" (pamphlet).

A. V. Abbott, C. E.: "Improvements in Methods for Physical Tests" (pamphlet).

T. Egleston, Ph. D.: "Some Researches on the Amalgamation of Gold and Silver" (pamphlet).

S. Stutz, M. E.: "Improvements in Coal Washing, Elevating and Conveying Machinery" (pamphlet).

A GENERAL METHOD OF TOUGHENING GOLD (AND SILVER) IN THE MELTING CRUCIBLE.

By Dr. James C. Booth, of the U. S. Mint, Philadelphia.

Gold and silver differ from other elements, except those of the platinum group in their feeble affinity for oxygen, and by means of this property, we can separate the noble metals from others by fusion in the fire, in which heat removes oxygen from gold and silver and attaches it to the others. To this first class we may add a second, embracing iron, nickel, copper, tin, bismuth, and lead, whose oxides may be reduced to metal by being heated with fuel, or without reduction can be melted with fluxes or slag. A third class, arsenic, antimony and sulphur, are reduced and volatilized, or are fluxed off with alkali and oxides of the second class.

To illustrate the subject practically, I shall describe an operation of toughening brittle gold, which I recently performed at the United States Mint at Philadelphia. Some brittle gold, having been accidently melted with a quantity of well refined and tough gold, was found to have rendered the whole mass very brittle, with a highly crystalline fracture, and therefore useless for coinage. I determined to avoid loss of time, and the greater cost of refining by acid, and to toughen it wholly by fluxing. This was accomplished on $75{,}162\frac{55}{100}$ ounces (= 5,154 lbs. av.) in $1\frac{1}{2}$ days, at a trifling cost, and with scarcely apparent loss. The 75,000 oz. were divided into 14 melts of about 5,400 oz. each, and each melt separately toughened. The ingots, easily broken into pieces by striking them on the edge of a wooden box, were put into the crucible with soda ash and anhydrous, fused borax, in the ratio of one or two ounces to a melt, until the crucible was nearly full. It then appeared as a quiet mass of metal covered with a rather viscid slag, disposed to swell and puff. A few crystals of saltpetre, say one or two ounces, were then dropped successively into the centre of the metallic surface, and as they melted, their spreading out over the whole surface was aided by the concentric motion of the bottom of a small crucible. The moment the visible oxidizing action began to slacken, the melter skimmed off, by a small, black-lead dipping crucible, the fluxed matter as rapidly as was consistent with the care necessary to avoid taking up metal. The remainder in the melting pot was the toughened metal.

There are several points worth noting in the operations just described. 1. One part of the foreign matter was sufficient to impart brittleness to 75,000 parts of good standard gold (st. gold = 900 gold + 100 copper, &c.). 2. By a slight oxidizing process the matter causing brittleness was collected and removed at a trifling cost in 1½ days, without appreciable loss of gold. 3. Still more remarkable is the fact that the 14 melts of gold, in their brittle state, proved by assay to be of true standard, 900 gold + 100 alloy (usually 90 copper + 10 silver), after their brittleness had been changed to toughness by fluxing and skimming, were still 900 gold + 100 alloy, inappreciably altered. So delicately executed is the act of toughening, that although 10 per cent. of the metal is easily oxidized copper, yet the ratio of copper after fluxing is the same. 4. Another point worthy of remark is that the toughening proceeds from the top downward, to the depth of 9 to 12 inches of its own accord, although it is stirred towards the close of the operation to render the melt uniform throughout.

I do not wish the inference to be drawn that every case of toughening brittle gold is as successful or simple as the above. When the metal contains a larger proportion of foreign matter, the operation of fluxing, nitring and skimming may have to be repeated, perhaps more than once. While the crucible is on the fire, the perfection of the toughening may be readily ascertained in 2 or 3 minutes by casting a thin strp, ¼ — ⅜ inch thick, and doubling it under the hammer or rolling it, the cracking of the strip in this case, if any, or its snapping asunder, informing the experienced eye of the degree of completeness in the toughening operation.

When the bullion appears to be baser—to contain a larger amount of foreign matter than in the example specially quoted in this paper, and experience can often make an approximate guess at the degree of baseness as well as at the nature of the elements causing it, then the only change made in the toughening consists in using a larger amount of soda and borax, and a still larger proportion of nitre. Two points are to be noted in the use of a large amount of this more oxidizing flux: 1. That some of the graphite of the crucible at the level of the liquid is cut away, injuring the cruucible and weakening the oxidizing power of the nitre. 2. That since the larger bulk of fluxing matter increases, the time of skimming, some of the oxidized foreign matter, in the presence of a

large amount of metal, and surrounded by graphite, tends to revert to the metallic state.

To obviate these difficulties or objectionable features, after going through the stronger oxidizing process, as above described, the oxidation is suddenly fixed by the rapid addition to the floating slag of sand lime or bone ash, which is stirred with the slag and thickens or stiffens it, so as to allow more deliberate skimming of the whole mass without fear of reoxidization. I have tried the three thickeners above named, which seem to act rather mechanically than chemically, and, of the three, prefer sand. Where thickeners are employed on standard gold, there is greater liability to an increase in fineness of the standard by the removal of oxide of copper, together with the oxidized embrittler, so that brittle gold of 900 after toughening may be 900.5 or even 901.

The toughening of the above 75,000 oz. effected in 14 meltings (14 crucibles full) of over 5,000 oz. each in standard gold, resulted in less than a crucible full of skimmings. The skimmings are worked down to metal and poor slag as follows. They are quietly melted and cooled slowly, so as to form a *king* of metal at the bottom of the crucible, and a glassy or cindery slag above. The last is ground and separated by sifting and washing into metallic grains and poor cinder. The grain and king are again fluxed and treated as before, either by themselves, or as usual with other light residues. Thus, the impurities of gold (and silver) are successively worked out, by concentrating them in a small bulk and weight of metal, and purifying it with a greater diminished risk of loss of gold than if we attempted to purify a large mass at one operation. In the case detailed in this paper, the impurities were concentrated by a single operation of purifying in a king of about (8) eight oz. From the purification of this king, we have ground for asserting that the impurity causing brittleness in the whole 75,000 oz. was a small fraction of an ounce, probably $\frac{1}{300,000}$ or less, of the original weight.

As a concluding note to this paper, I must state that a great deal of skill is required to avoid loss of gold in executing the process herein detailed; that the melter must have unusual powers of observation and long practice to acquire the necessary skill, and I deem it but justice to state that Mr. F. C. Garrigues, my foreman, especially in the melting department of the Mint, possesses the requisite skill and practice, and that he performed the operations above described.

METHOD FOR THE ASSAY OF INDIGO.

By Charles Tennant Lee.

The determination of indigo blue, or indigotin, in indigo, presents various difficulties. The processes in use are long, and subject to considerable error. The methods which depend upon the reduction and subsequent measured oxidation of indigo, require the elimination, previously, of all other reducible bodies, to insure accuracy—an operation both long and tedious. The method by formation of sulpindigotine and its estimation by a standardized permanganate solution, always gives too high results by reason of the presence of other oxidisable bodies.

For several years the author has used a method by sublimation, which has been uniformly satisfactory. Indigo blue sublimes readily and, by a careful regulation of temperature, can be separated from the other components of indigo, indigo brown, indigo red, mucilaginous matter, etc.

The operation is best effected in a shallow platinum tray. Those in use are 7 cm. long, 2 cm. wide, 3-4 mm. deep. Into such a tray is weighed about 0.25 grms. of finely powdered indigo which has been dried at 100° C. The weighing should be rapid to avoid absorption of moisture, and it is best not to exceed this amount greatly for a tray of the size noted, in order that the layer of indigo may be thin.

Spread the weighed powder evenly over the tray by tapping it with the finger; this can be done easily if the bottom of the tray is quite flat, with no rounding towards the sides. Sublime on an iron plate, at first raising the heat gradually to avoid burning.

When the surface of the indigo is covered over with a shining layer of crystals, turn down upon the plate a piece of Russia iron bent into the form of a flat arch, the highest point of which is about 1 cm. above the plate, and a little longer than the tray. Lower the heat at the same time that the arch is put on, as the temperature rises rapidly.

The purple vapors of indigotin are now given off, a portion condensing upon the under sides of the arch. Raise the heat slowly, and enough to maintain a constant sublimation of indigotin. By raising the arch the progress of the work is seen. For a 50% indigo the time required is 30–40 minutes; but soft, Java indigo must be sublimed with more caution, and sometimes require

two hours. The last crystals of indigotin are easily seen upon the the dark colored surface of the residue. When all have disappeared, remove the tray, cool in a dessicator, and weigh. The loss in weight is indigotin. Observe that the heat be no greater than is required to sublime the indigo blue; and that no yellowish vapors appear, which would indicate the destruction of the residue, leaving only ash.

If the bottom of the tray is flat and everywhere touches the plate, the sublimation goes on regularly, except in case of very rich indigos, already mentioned, when care must be exercised to prevent burning.

Results by this method are constant within $\frac{1}{4}$ of 1 per cent., but the author has frequently made re-determinations with variations of only half that error.

A little practice enables one to leave the sublimation with only occasional attention, and three or four determinations may be carried on at once under the same arched cover.

For commercial and industrial purposes this method appears to have decided advantages. Its rapidity is in great contrast to the other methods which admit of perhaps two determinations in a day, while in point of accuracy it is not wanting.

Laboratory 45 Kilby st.,
Boston, 5th May, 1884.

NOTE ON EXAMINATION OF SNOW WATER.

By E. Waller, Ph. D.

During the first snow-storm of the past winter (December 19th, 1083) some of the fresh fallen snow was collected and submitted to examination. As the results may be of some interest to the members of the Society I beg to submit them.

The sample was collected in the yard at Columbia College after it had been snowing for some three or four hours, and snow was still falling. The ground was then covered to the depth of about four inches.

The snow was taken up without touching it with the hands, and placed in a large stoppered bottle, which was then closed and placed on the shelf in the laboratory until the snow had melted. It may be here noted that the surface beneath the spot from which it was taken was a graveled walk. The examination of the water was conducted after the larger particles of sand, coal from the engines on 4th ave. &c. had settled out. The water was slightly turbid. The results were (in parts per 100,000.)

Chlorine	trace	Free Ammonia	0.0396
Phosphates	none	Albuminoid Ammonia	0.0318
Nitrates	none	Hardness	0.91
Nitrogen in Nitrates	0.0494	Total Solids	6.3

The sediment from the water was collected. While it was settling a slimy fungoid growth collected at the bottom of the vessel which caused the sediment to adhere somewhat to the glass. To remove this the material was gently ignited and afterward examined under the microscope. The object aimed at was the identification if possible, of particles supposed to have come from the Java volcano, Krakatoa, which have been asserted to exist in the snow, &c., which fell in the early part of the winter. A specimen of the volcanic ash known to have come from that volcano was also examined under the microscope at the same time. A $\frac{1}{8}$ objective (Beck) was used. To my eye the only forms common to both the specimens were small, vitreous particles looking like broken up microscope covers.

I am, however, not familiar with the characters of volcanic ashes under the microscope, and may have missed what should be looked upon as characteristic. Judging from what was observed, it seems doubtful whether it could be safely asserted that the snow contained any particles which originally came from the volcano.

AN ANALYSIS OF SLAG FROM IGNITED GARBAGE.

By Charles E. Munsell, Ph. D.

The sample analyzed was prepared, under the direction of Dr. C. F. Chandler, by roasting and then igniting street sweepings and garbage, until all carbonaceous matter had disappeared. The analysis was made according to the methods of the late F. A. Cairns.

The results were as follows:

Silica	60.65
Alumina	12.88
Ferrous Oxide	3.13
Lime	14.21
Magnesia	1.93
Sulphuric Acid (SO_3)	1.24
Phosphoric Acid (P_2O_5)	.77
Potassa	1.79
Soda	2.36
Carbon Dioxide and loss	1.04
	100.00

The large percentage of silica is due to the wear of the street pavements and the alumina and lime to coal ashes; probably some of the alkalies were volatilized.

The analysis, as a whole, shows that the product could not be economically utilized as a fertilizer, as steam-packing, or for making cement.

ABSTRACTS.

GENERAL AND INORGANIC CHEMISTRY.

On the Sulphides of Phosphorus. E. DERVIN.

A mixture of sulphur with P_2S_3 dissolved in carbon disulphide, when exposed to light, afforded PS_4 or the P_3S_{12} of Rame. The same mixture heated in sealed tubes to 180°, yielded P_4S_{11}=P_2S_3, 2 PS_4. The effect of heat upon mixtures of P_2S_3 with PS_3 or PS_5, afforded PS_4, or, when the P_2S_3 was in great excess, P_4S_{11}. Attempts to prepare PS_3 by fusion were unsuccessful, and the author expressed doubts as to its existence as a definite compound. (*Bul. Soc. Chim.*, **41**, 433.) E. W.

On the Sulphites and Bisulphites of Soda. R. DE FORCRAND.

The results of thermo-chemical investigations on the pure crystalized sulphite (with 7aq.), and bisulphite or metasulphite $Na_2S_2O_5$ (anhydrous). (*Bul. Soc. Chim.*, **41**, 436.) E. W.

On Glyoxal Bisulphite of Soda. R. DE FORCRAND.

Thermochemical examination of the compound which contains two molecules of the bisulphite to one of glyoxal. (*Bul. Soc. Chim.*, **41**, 441.) E. W.

The Heat of Hydration of Salts.—S. U. PICKERING.

The heat of hydration of an anhydrous salt has been taken heretofore as the difference between the heat of solution of the anhydrous salt and that of the hydrated salt. This difference includes both the heat of combination of the anhydrous salt with water and the heat set free on solidification of this water, since Persoz has shown that the water in hydrated salts is in the solid state. (*Chem. News*, **49**, 216.)

A. A. B.

Note on the non-existence of Ammonium Hydrate. D. TOMMASI.

NH_4OH, if it exists, must be very unstable.

The calculation of the heat of combination of the hydrate does not correspond with the amount found by actual experiment, as is the case with other alkaline and alkaline earth hydrates. The author consequently concludes that it does not exist. (*Bul. Soc. Chim.*, **41**, 444.) E. W.

On the quantities of heat disengaged by the compression of solid bodies. W. SPRING.

A criticism of the remark of M. Jannettaz, that the compression of solids generates considerable heat, and consequently that the formation of chemical compounds by pressure, is attributed rather to the heat developed than to the pressure itself. The author describes several experiments to show that this proposition is untenable. (*Bul. Soc. Chim.*, **41**, 488.) E. W.

On the quantities of Sulphides found by successive compressions of their elements. W. SPRING.

The results of successive compressions of mixtures of sulphur with silver, lead and copper are here given. The conclusion is that pressure determines the combination of solid substances with one another under certain conditions, the quantity of compound produced depends both on the size of the surfaces in contact and the duration of this contact. (*Bul. Soc. Chim.*, **41**, p. 492.) E. W.

ORGANIC CHEMISTRY.

On the probable number of homologous and isomeric Rosanilines. MM. ROSENSTEIHL AND GERBER.

The authors refer to the researches of Hofmann, E. and O. Fischer, Coupier, and to their own, which indicate that in the preparation of rosanilines, paratoluidene may be replaced by different homologues, and the aniline by certain amido-methylbenzenes. A discussion of the necessary constitution of the compounds from which the rosanilines can be prepared is given. (*Bul. Soc. Chim.*, **41**, 418.) E. W.

On the Synthesis of the diphenyl Ethane derived from Elhylidene Chloride. R. D. SILVA.

A claim of priority as against MM. Angelbis and Anchütz (Berichte, 1884, 165). The author notes that ethylbenzene has never been found by him in preparing symmetrical dibenzyl or diphenyl ethane, but in preparing dissymmetrical diphenyl propanes, considerable quantities of a cumene, C_3H_7,C_6H_5 were obtained. (*Bul. Soc. Chim.*, **41**, 448.) E. W.

Action of Isobutylchloride on Benzene in presence of Aluminium Chloride. E. GOSSIN.

The reaction in the cold afforded butyl benzene, $C_{10}N_{14}$ (=C_4H_9—C_6H_5) boiling at 166–167°; vapor density 4.72 (Meyers' method); specific gravity 0.8795. A small amount of a liquid boiling at 152–155°, and having the same percentage composition ($C_{10}H_{14}$) was also formed. (*Bul. Soc. Chim.*, **41**, 446.) E. W.

On Anthemene—Researches on Roman Chamomile. L. NAUDIN.

After extracting chamomile flowers completely with petroleum ether (by the use of cold and vacuum), about nine-tenths of the solvent were distilled off. The residue, by long standing, deposited a crop of crystals which, when examined with the microscope, were found to consist of two different compounds. By dissolving them in twenty times their weight of boiling alcohol, filtering boiling hot, and allowing to cool, but one of the compounds separated in fine needles. By concentrating the solution, crystals of the second body were obtained. The substances were purified by

fractional crystalization; the one least soluble in alcohol fused at 63–64°, the other at 188–189°. The first was more especially examined. It is white, without taste or odor, boils at 440° without apparent decomposition. Density at 15°, 0.942. Insoluble in water, soluble in ether, petroleum, etc. Fairly soluble in boiling absolute alcohol, very slightly so in cold. The elementary analysis presented a curious anomaly, essentially confirmed by a check analysis made at the author's request by M. Schutzenberger.

	Narodin (mean of several).	Schutzenberger.
C	83.80	84.30
H	14.40	14.17
Loss	1.80	1.53

No oxygen appeared to be present. Vapor density referred to hydrogen, observed 127; theory for $C_{18}H_{36}$, 131. The author proposes to call it β–octadecene, or anthémène, the analysis, excluding the incomprehensible loss, indicating the above formula. (*Bul. Soc. Chem.*, **41**, 483.) E. W.

ANALYTICAL CHEMISTRY.

On the Determination of Phosphorus in Iron and Iron Ores.—A. ZAMM.

Dissolve the iron in HNO_3 (1.20) using 12c.c. per grm. of iron, boil briskly to dryness and heat for 1 hour at 200° C. Then add 6c.c. of HCl (1.12) per grm. of iron, boil to dryness, add HCl boil again to near dryness, and finally, add 1–2 volumes of water and filter off silica. Strong heating after action of HNO_3 ensures complete precipitation by molybdate.

Add an equal volume of the molybdate, prepared according to Eggertz' directions, to the solution of iron, which should not exceed 20c.c. per grm. of iron. If the proportion of phosphorus is up to several tenths of one per cent. add an excess of molybdate, equal to 2c.c. for each .001 grm. of P. Heat for 1 hour at 40°, remove the liquid with a syphon having a lateral opening near the closed end of the shorter limb (to prevent disturbance of the precipitate) wash on a very small filter with 1 % solution of HNO_3 (1.20) dry and weigh. The yellow precipitate contains 1.64% of P. The filter should have been previously dried at 120° and weighed or when great accuracy is not desired, 5 per cent. of the weight of the undried filter may be deducted for moisture. In absence of arsenic the precipitation may be completed in 1 hour at 50°. (*Chem. News*, **49**, 208.)

A. A. B.

New method of determining Carbon in Cast Iron. M. ZABOUDSKY.

The finely pulverized metal is mixed with a dry mixture of copper and sodium chlorides (prepared by evaporating to dryness a solution of copper sulphate with sodium chloride). About 14 grams. of the mixture, containing 4.8 grams. $CuCl_2$, is taken for each gramme of iron. After thorough mixing (dry) in a mortar, water sufficient to form a paste is added, and the mass is triturated for about half an hour. The mass is then transferred to a beaker, the mortar rinsed into the beaker with ferric chloride solution (1 to 4), and 200 c.c. of the latter added. After gentle heating, hydrochloric acid is added. If properly managed at this point, only the carbonaceous material should remain undissolved; this should be filtered through asbestos, dried at 125° to 130°

and weighed. The residue is not pure carbon, as has been usually supposed, but contains hydrogen and oxygen in combination with it. The amount obtained must be multiplied by one of the following factors to obtain the actual amount of carbon present:

	Factor.
From Spiegel, not manganiferous	0.720
Ferromanganese	0,700
Spiegel, manganiferous	0.685
White pig Pure gray pig	0.710
Very pure gray pig with a little combined C	0.655
Cast steel of guns and muskets containing about 0.5% C.	0.660
Hard steel	0.675
Iron	0.690

The author finds the results more satisfactory than by the Eggertz iodine method. (*Bul. Soc. Chim.*, **41**, 428.) E. W.

The estimation of Sulphurous Acid in its compounds. W. B. GILES and A. SHEARER.

The authors incidentally note that crystallized sodium sulphite invariably contains $7H_2O$, the $10\,H_2O$ crystals having never been noticed by them. Fresenius' method of analysis, with iodine solution, was found to give results which were constant but invariably low. The difficulty in obtaining and keeping water free from dissolved air, also proved to be a strong objection to the process. The method which they propose consists in pouring upon the material (after weighing out), at once, *without dissolving*, an excess of $\frac{1}{10}$ normal iodine solution, effecting solution in this, and titrating back with thiosulphate and starch. In the case of fluids they may be sealed up in thin glass bulbs, which may be broken under the iodine solution. After a preliminary approximate test, a second is made, using only a slight excess of the $n/_{10}^{1}$ I solution. Attention is called to the siphons of liquid SO_2, furnished for laboratory use by a manufacturer in England. (*Jour. Soc. Chem. Ind.*, **3**, 197).

E. W.

Determination of Phosphoric Acid in Arable Soils.—BY G. LECHATIER.

In two communications presented by M. de Gasparin, one in

1883, and another in January, 1884, (this journal, vol. VI., p. 137), the following process is given for the determination of phosphoric acid in arable soils.

The specimen of soil is treated by *aqua regia*, and the soluble portion obtained is precipitated by ammonia. The precipitate is collected, dried, strongly heated, pulverized and treated with cold nitric acid of $\frac{1}{50}$ strength. Phosphoric acid is dissolved and ferric oxide remains. The former is precipitated with ammonium molybdate.

The author has had to determine phosphoric acid in soils. The solutions of which in *aqua regia* contain variable quantities of lime, magnesia, potassa, soda ferric oxide, alumina, phosphoric acid and silica. Generally the quantities of lime and magnesia are very small. In these solutions, the successive addition of small quantities of ammonia, separate phosphoric acid as ferric and aluminic phosphates, while the liquid is still acid, and before calcic phosphate separates. The ferric and aluminic phosphates are not entirely soluble in nitric acid of $\frac{1}{50}$ strength.

The following experiments were made with acid solutions containing .041 grm. of phosphoric acid and varying proportions of ferric oxide.

Ferric oxide, mixed with .041 grm. phosphoric acid.	Phosphoric acid dissolved in weak nitric acid.
grm.	grm.
0.8	0.038
2.0	0.023
4.0	0.021

If the quantity of phosphoric acid is doubled, the quantity dissolved is only $\frac{2}{3}$ to $\frac{3}{4}$ of the quantity present. Nitric acid of $\frac{1}{50}$ strength was used. The remainder of the phosphoric acid was found in the calcined precipitate, showing that precipitation was complete, but solution defective. Similar results were obtained with alumina.

The author precipitates ferric oxide and phosphoric acid with milk of pure lime, so to have an excess of lime in the precipiate. This precipitate was strongly heated, reduced to a fine powder and digested at 60° C. in nitric acid (acid 2 c.c., water 200 c.c.) Phosphoric acid is then entirely dissolved, even when mixed with 80 times its weight of ferric oxide. If digestion

takes place in the cold, with an acid solution of $\frac{1}{40}$, only 0.036 grm. is dissolved out of 0.041 grm. of phosphoric acid.

A certain quantity of ferric oxide is dissolved, but phosphoric acid may be separated by molybdic acid even in presence of a large quantity of ferric oxide.—(*Comptes Rend.* **98**, 817.)

P. C.

On the Examination of Tanning Extracts. F. SIMAND.

The author prefers the improved Löwenthal Method (D. Pol. J. **246**, 41, 133) for technical determinations, but calls attention to the fact that hot water dissolves more tannin from these extracts than cold water, and insists on the necessity of specifying whether hot or cold water has been used, when results of an analysis are given. The results obtained with hot and cold water extracts of quebracho, oak, beech and chestnut wood, and with valonea, oak bark and sumac respectively, exhibit differences varying from 2.45 in oak wood, to 19.66 in sumac, per 100 of tannin. (*D. Pol. J.*, **251**, 472.)

A. A. B.

INDUSTRIAL CHEMISTRY.

On the Oxidation of Cellulose with special reference to the chemistry of Bleaching and Dyeing. C. F. Cross and E. J. Bevan.

A review of results obtained by the author as well as by G. Witz (Bull. Soc. Ind. Rouen[10] **5**, 416 and [11] **2**, 169), (Drug. Pol. Journ., **250**, 271), regarding the oxidation products of cellulose. Witz found that solution of bleaching powder and CO_2 had no apparent action upon cotton goods below 60°, but above that temperature the action was marked, the effects increasing with the temperature, until at 100° the cotton was resolved into a powder. Light assisted the action. The compound formed, which he called oxycellulose, contained about 1 per cent. more oxygen than cellulose. This compound has a strong affinity for certain coloring matters, principally those of a basic character. Methylamine blue dyes it readily, and was used as a test for its presence. For diphenylamine blue it has no affinity. The tests are best made in a 1,2000 cold solution of the former, in which the cotton is soaked for 20 minutes. If the cloth has been bleached the chlorine must be removed by a series of washings with diluted reagents, nitric acid, bisulphite of soda, hydrochloric acid, &c., the mode of using which is specified. The researches of M. Witz furnish a guide to bleachers to the best method of managing their goods so as to bleach, and at the same time avoid injuring the fibre. The oxycellulose, which can be produced at will, has a strong affinity for vanadium compounds, so great indeed that it will abstract the vanadium from a solution containing a million millionth part (1,000,000,000,000).

Patterns in oxycellulose can be made on the cloth, *i. e.*, the oxycellulose can be used as a mordant for many dyes. Caustic alkalies prevent the formation of this compound. Many hitherto unexplained phenomena in bleaching and dyeing have been made clear by the discovery of this compound. The jute cellulose, isolated and examined by the authors, seems to be identical with oxycellulose. Another oxydation product of cellulose recently obtained by use of an alkaline solution of potassium permanganate, is also briefly mentioned. It seems to be $C_{19}H_{18}O_{22}$, and closely resembles Fremy's metapectic acid. (*Jour. Soc. Chem. Ind.*, **3**, 206).

E. W.

Injury done to vegetation by Gases arising from certain manufacturing processes. S. HAMBURGER.

A table of the results of a series of examinations of leaves from different plants, most of which grew in the neighborhood of manufactories at St. Helens. From the amounts of ash of SO_3 and of Cl determined, no positive inferences could be drawn. Testing the aqueous extract of the plant with litmus paper, appeared also to be of no service. The SO_2 in gases from the combustion of coal, appeared really to be the principal cause of injury to vegetation. Angus Smith found in the air of London 730 grains SO_3 per million cubic feet and 1098 grains in that of Manchester. The author found 1260 grains in the air of St. Helens. Assuming a coal of average composition, containing 2 per cent. S, he calculates that fire gases contain 0.193 volume per cent. SO_2, and would have to be diluted with 64 times their volume to bring the proportion down to 0.003 volume per cent., the limit of safety according to Freytag. Fruit trees are most sensitive to these gases, forest trees are less so, and agricultural plants are still less. Soot is not damaging to plants.

Experiments were made by treating plants with the spray of dilute acids. Two thousandth normal solutions of H_2SO_4 and HCl. (0.0245 gm. H_2SO_4 or 0.01825 gm. HCl per litre), the strongest solutions tried, seemed to be without effect. Experiment showd that chlorophyll, under the influence of acids, sooner or later turned brown, depositing a brownish sediment. Leaves damaged by acid fumes showed brownish spots, but attacks of insects, fungi, &c., sometimes caused similar spots. (*Jour. Soc. Chem. Ind.*, **3**, 202.) E. W.

Further notes upon the solidification of Fatty Oils. W. L. CARPENTER.

Description of the process of St. Cyr Radisson for the conversion of oleic acid into palmitic by means of the reaction observed by Varentrapp in 1841. It consists in heating the oleic acid with a large excess of caustic potash, the reaction being

$$C_{18}H_{34}O_2+2KHO=C_{16}H_{31}KO_2+C_2H_3KO_2+H_2.$$

The apparatus (termed a "cartouch") consists of a short, closed cylinder, with funnel-shaped base and provided with mechanical stirrer. A sectional view is given. It is charged with 1,500 kil.

oleic acid and 2,500 kil. potash lye (Sp. Gr. 1.4). Heat is applied, a hole in the cover being left open until steam ceases to escape, when it is closed, and the gases escaping are passed through a coke tower to a gas holder. The reaction begins at 290° C., and goes on at 300 to 310°. At 320° the odor of the gas changes, and steam must be at once injected to prevent destructive distillation. 36 to 40 hours are required to complete a charge. The progress of the reaction is judged of by the congealing point (Dalicau test) of the fatty acids obtained from small samples withdrawn from time to time. (*Jour. Soc. Chem. Ind.*, **3**, 200). E. W.

Note on the manufacture of simple Cyanides and Prussiates by the aid of Trimethylamine; process of Ortlied and Muller. E. WILLM.

The reaction indicated by Wurtz (Ann. de Chim. Phys. (3), **30**, 454), is used in this process. Commercial trimethylamine is vaporized and the vapors decomposed into hydrocyanic acid and ammonium cyanide by passing through red hot retorts. The vapors are first passed through dilute sulphuric acid, which takes up the ammonia, and then through solutions of potash soda, &c., to form the cyanides desired. The unabsorbed gas is used to illuminate the works. If prussiates are desired, cakes of ferrous oxide, prepared by precipitating ferrous chloride with milk of lime, and filtering by filter press, are introduced into the alkaline absorbers. The oxide dissolves as the cyanide forms. No unpleasant fumes whatever are produced in the process. (*Bul. Soc. Chim.*, **41**, 449.)

E. W.

On the effect of temperature in Dyeing. E. J. MILLS and A. G. RENNIE.

Experiments with purified cashmere wool and a 0.02 per cent. solution of rosaniline acetate showed that the maximum dyeing effect was produced at 31.1° C., the minima of effects being at —1.46° and +81.15°. Using the rosaniline salt in excess, the maximum deposition of color occurred at 39° C., the minima at about 0° and at 82°. With mauveine the maximum was at about 49° C., the minimum was calculated as —23.8° C., but on the other side was not reached at 85° C., though the diminution was quite marked. The conclusion is that where an aniline color is susceptible of dissociation there is a positive disadvantage in using high temperatures in the dye bath. (*Jour. Soc. Chem. Ind.*, **3**, 215.) E. W.

Standard methods of sampling and analyzing Commercial Products and of stating the results.

A conference on this subject in the Manchester Section.

The discussion was participated in by Messrs. I. Levinstein (chairman), Geo. E. Davis, Mellor, Watson, Smith, J. Carter Bell, Watson and Grimshaw.

Prof. Roscoe also had written a letter on the subject, which was read. There was on the part of most of the speakers a strong objection to fixing upon methods which must invariably be used by the analysts, but all agreed that more thorough and satisfactory methods of sampling should be used, and that analysts should not (as is frequently the case) be accused of inaccuracies for which they are really not responsible. The following resolution was passed : "That in the opinion of this meeting it would be practicable and very desirable to attain a national agreement on standard methods of sampling ores, raw products and chemicals, but that an international agreement would be at present impracticable." (*Jour. Soc. Chem. Ind.*, **3**, 210.) E. W.

On the existence of Manganese in Wines. E. J. MANUMENÉ.

In three wines of Lower Beaujolais (vintage of 1865, 1882 and 1883) the author found considerable proportions of manganese. It appeared to exist in the wine as double tartrate of potassium and manganese. The proportion of metallic manganese in the wine of 1865 (red), was found to be 5 to 7 mgs. per litre, corresponding to 51.73 mgs. of double tartrate. The soil upon which the grapes grow is known to contain much manganese. Further investigation is proposed. (*Bul. Soc. Chim.*, **41**, 451.) E. W.

Abstracts of American Patents Relating to Chemistry.

(*From the Official Gazette of the U. S. Patent Office.*)

April 1, 1884.

295,931.—Manufacture of artificial stone.—M. McNamara.

Portland cement, sand, ground glass, plaster of Paris, pitch, paper-pulp, salsoda, litharge and alum.

295,968.—Coffee substitute and process of preparing the same.—C. Alvord.

Extract of willow bark or tulip-tree bark with corn, barley, wheat, rye, peas, or other amylaceous substance. The latter are saturated with the former and then dried and roasted.

295,988.—Metallurgical gas-furnace.—W. F. Durfee and T. Egleston.

296,000.—Apparatus for separating solid and liquid portions of starch refuse, &c.—P. H. Grimm.

A combination of mechanical devices for obtaining the above result.

296,033.—Reverberating gas-furnace.—W. L. McNair.

296,040, 296,041 and 296,042.—Apparatus for and process of cooling and drying sugar.—H. E. Niese and G. Dinkel.

The soft sugar, upon its discharge from the centrifugal machine, is immediately conveyed to suitable shutes and nozzles where it comes in contact with a strong blast of cold air, by means of which the particles of sugar are scattered, cooled and partially dried.

296,112.—Polishing compound.—H. H. Becker.

Bone-ashes and slate.

296,116.—Process of roasting and disintegrating gold, silver and copper ores.—D. W. Birmingham.

Prepares refractory ores for amalgamation by combining therewith lime, carbon, and common salt, or equivalents, roasting the mixture and then subjecting the same to a suitable bath.

296,159.—Lubricating oil.—J. E. Gill.

A lubricating oil composed of a compound of mineral or vegetable oil, and either an oxide or carbonate of lead, to which mineral oil is subsequently added, said compound being first raised to a temperature of 480° to 500° Fahrenheit, then reduced about 20° by adding mineral oil, and then raised again to the first high temperature before the rest of the mineral oil to be added is introduced.

296,187.—Apparatus for extracting oil from oleaginous substances.—W. Krutzch.

Not intelligible without the drawing.

296,197—Liquid for and process of generating a compound vapor as a motive power.—W. L. Lowrey.

Employs the vapor from mixtures of water and various alcohols in different proportions for operating steam or vapor engines.

296,200 and 296,201.—Process of manufacturing and apparatus for the manufacture of hydrocarbon gas.—W. F. M. McCarty.

Consists in passing superheated steam through or in contact with heated sulphate of lime and through or in contact with heated finely-divided metallic iron or copper, then mixing the gas so obtained with a liquid hydrocarbon, and converting the mixture into a fixed gas by heat.

296,206.—Process of enameling iron ware.—H. C. Milligan.

Adds to the paste after it has been prepared in any of the well-known ways, an additional supply of alkali solution sufficient to neutralize any acid which may be present in the paste.

296,258.—Rubber-surfaced fabric and composition therefor.—N. N. White.

A close textured fabric is surface-coated with a composition consisting of dissolved india-rubber and gutta-percha and a filling of zinc-white, sulphur or sulphide and aniline pigments consisting of aniline, china clay and precipitated silicate of soda. Other compositions are proposed, together with the methods of preparing them and fixing them to the fabric.

296,260.—Apparatus for the manufacture of bicarbonate of soda.—C. Wigg.

In a plant or apparatus for the manufacture of bicarbonate of soda, the combination of a series of absorbers, each provided with rotating perforated gas distributors and rotating cooling beaters, the absorbers connected by circulating pipes, a brine-purifying tank provided with a perforated diaphragm and connected with the absorbers by a brine-delivery pipe and a gas-inlet pipe, a carbonic acid gas generator provided with a vertically adjustable cage and connected with the absorbers by suitable gas-delivery pipes, and a series of filters, each connected with its respective absorber, and with an exhaust pump for maintaining a partial vacuum in the filters.

296,262.—Manufacture of spongy lead.—F. T. Williams and J. C. Howell.

Consists in inserting a perforated mould of the size and pattern of the block or plate required into a bath of the crystallized and molten metal, then removing the mould from the bath and allowing the liquid metal to drain through the perforations.

296,263.—Water-proofed textile fabric.—I. F. Williams.

296,289.—Process of generating gas.—G. Jones.

Petroleum is fed in a small stream before a blast of superheated steam. Heat is applied at the moment of vaporization to prevent condensation.

296,290.—Gas generator.—G. Jones.

Oil is vaporized by steam, and oil vapor is mixed with steam in a hot retort. The oil vapor pipe leading from the spraying injector is provided with a steam jacket to prevent condensation of vapor before reaching the hot retort.

296,303.—Polishing liquid.—E. Ludwig.

Composed of Vienna lime, oil of turpentine, linseed oil and gasoline.

April 8, 1884.

296,324.—Fire and water-proof paint.—M. O. Fisher.

Coal tar, yellow ochre, mineral paint, sulphur, alum and talc.

296,326.—Depurated composite sugar, &c.—J. Gandolfo.

Compounded of cane sugar and grape sugar which has been liberated of its deliquescent salt and then reduced by shaving, sifting and drying.

296,337.—Apparatus for the purification of water.—A. R. Leeds.

Not intelligible without the specification and drawings.

296,357.—Process of and apparatus for reducing metals by electrolysis.—A. J. Rogers.

Electrolyses sodium or potassium chloride while in a fused condition and contained in a vessel with close-fitting covers having gas-tight passages leading therefrom; condensing apparatus, &c.

296,365.—Galvanic battery.—H. Thame.

Employs chlorochromic acid ($Cr\ O_2\ Cl_2$) for charging the carbon cells.

296,709.—Process of separating precious metals from ores, &c.—E. H. Russell.

The process of separating from ores and metallurgical products gold, silver and copper free from lead, which consists in leaching the ore or product with a hyposulphite solution containing a soluble carbonate.

296,710.—Process of separating metals from ores and metallurgical products and from each other.—E. H. Russell.

First dissoves out the precious metals and lead from the ore or product by means of a hyposulphite solution, and subsequently adds to the mixed solution a soluble phosphate to cause the precipitation of the lead.

April 15, 1884.

296,722.—Fire proof paper.—D. N. Brown.

Asbestus and infusorial earth.

296,765.—Manufacture of white lead.—J. C. Martin.

Produces solutions of lead salts by dropping molten lead upon stationary or wetted surfaces, kept wet by jets or sprays of water or by occasional immersion in water, and dissolving the very small flakes or splashes of metallic lead so formed in a solvent.

296,816.—Triturating machine.—F. E. Boericke and G. Goll.

296,858.—Process of making zinc sulphide anhydrous.—T. Macfarlane.

Consists in heating hydrated sulphide of zinc to redness in the presence of chloride of zinc, whereby excess of air and oxidation are prevented by the fumes of the chloride of zinc, and discoloration and loss of covering power are avoided.

296,935.—Process of manufacturing cellulose from wood, &c.—C. F. Dahl.

Boils the same under pressure in a watery or hydrated solution containing sulphate, carbonate or hydrate of soda or sodium sulphide.

Also recovers some of the salts used by boiling with lime.

296,967.—Art of manufacturing celluloid and other compounds of pyroxylene.—J. W. Hyatt.

Consists in effecting the displacement of the aqueous particles by means of pressure applied to a suitable liquid (alcohol, &c.) whereby the aqueous particles are caused to leave the pulp, their places being occupied by the unobjectionable liquid particles which can afterward be utilized as a solvent.

296,968.—Process and apparatus for effecting the desiccation of pyroxyline pulp.—J. W. Hyatt, W. H. Wood and J. H. Stevens.

Improvement on the Letters Patent No. 133,229, Nov. 19, 1872.

Form the pulp into a cake, which is repeatedly subjected to great pressure in contact with a surface of bibulous material.

296,969.—Manufacture of pyroxyline material.—J. W. Hyatt, J. H. Stevens and J. Everding.

Consists in first forming it into cakes or plates; second, causing liquid solvents to flow over the cakes until a sufficient amount has been absorbed while the cakes are held apart; and third, allowing the material to remain in an air-tight case for a proper length of time.

296,970.—Manufacture of celluloid and other compounds of pyroxyline.—J. W. Hyatt, J. H. Stevens and W. H. Wood.

A process in which pyroxline is first ground to a pulp, then pressed into cakes and dried, and the cakes softened with the required amount of liquid solvent by being formed into a pile with the solvent between the cakes, and then mixed or masticated in heated rolls or other suitable apparatus.

297,039.—Method of and apparatus for bleaching sugar.—O. B. Stillman and J. M. Stillman.

The granular sugar is subjected to the action of sulphurous acid gas in a rotating cylinder.

297,074.—Paint.—E. H. Hague.

For preserving materials and rendering them fire and water proof, consists of coal tar, sulphur, china clay, alum, salt and black oxide of manganese.

297,095.—Washing raw sugar and apparatus therefor.—J. H. Tucker.

Consists in forcing fine sprays of water or syrup against and into a falling shower of finely divided raw sugar. The magma so obtained is then heated and subsequently run into the centrifugal machine.

297,098.—Application of celluloid for enameling textile fabrics, &c.—W. H. Wood and J. H. Stevens.

Enamel cloth, leather or textile fabrics by means of sheets or veneer of pyroxyline material, and effect the adhesion of the sheet or veneer by subjecting it to heat and pressure while in contact with a dried surface of a cement containing oxidizable or drying oil.

Reissue No. 10,469. Original No. 105,338, dated July 12th, 1870; Reissue No. 5,928, dated June 23, 1874.—Treating and molding pyroxyline.—J. W. Hyatt and I. S. Hyatt.

The use of finely comminuted camphor gum mixed with pyroxyline pulp, and rendered a solvent thereof by the application of heat.

April 22, 1884.

297,105.—Process of and apparatus for separating metals from their ores.—A. H. Bliss.

Mechanical arrangements for moving and retaining the triturated ore under the surface of the mercury in an amalgamator.

297,105.—Liquid Paint—G. T. Lewis.

White lead, oil and an alkaline solution of resin.

297,162.—Process of generating gas.—H. Pratt and J. J. Ryan.

Carbonic acid is reduced to carbonic oxide by incandescent coal, in the usual way, and the gases mixed with volatile hydrocarbons and discharged over the fire bed.

297,319.—Bleaching raw cotton.—J. C. Vanlohe.

Subjects the cotton in a compressed state, as in a bale, to the action of bleaching liquids, then rinsing it, tearing apart and loosening it and finally drying it.

297,323.—Apparatus for the manufacture of salt.—S. C. Wells.

A furnace for evaporating the brine, combined with mechanical appliances for raking and graining the salt.

297,354.—Composition for destroying the grape oidium.—H. de Chasseloup-Laubat.

Water, pentasulphuret of potassium and marine salt.

297,363 and 297,364.—Apparatus for filtering liquids—J. F. C. Farquhar and W. Oldham.

A cylindrical vessel with perforated false bottom for holding pulverulent filtering material and having a revolving cutter-head for removing the clogged material continuously.

297,413.—Manufacture of ethyl-blue coloring matter.—A. Kern.

Produced by the condensation of alpha-phenyl-naphthylamine with tetra-ethyl-diamido-benzophenone.

297,414.—Methyl-blue coloring matter.—A. Kern.

As a new product, the blue dye-stuff or coloring matter described in the specification.

297,415.—Methyl-blue coloring matter.—A. Kern.

As a new product, the purple dye-stuff or coloring matter described in the specification.

597,416.—Ethyl-blue coloring matter.—A. Kern.

Produced by the condensation of tetra-ethyl-diamido-benozophenone with dibenzylaniline.

297,467.—Process of and apparatus for the treatment of hops in the manufacture of malt liquors.—A. Steinke.

Boils the mash *in vacuo*. Conducts lighter portions only of the evaporated oil of hops back to the boiler.

297,480.—Process of separating metals from Franklinite ores. A. F. Wendt.

Consists in selecting that portion of the ore containing practically only franklinite and willemite, separating these minerals according to their specific gravities, smelting the willemite for spelter and reducing the franklinite, by the Wetherell process for oxide of zinc, and finally smelting the residuum for spiegeleisen.

297,502.—Absorber for ammonia ice-making apparatus.—M. S. Conly.

An outer shell containing a series of hollow-bottomed troughs for bringing the ammonia gas into contact with weak water of ammonia or water.

297,517.—Apparatus for the distillation of wood.—R. Haldane.

Adapted for the destructive distillation of sawdust, shavings, or other small wood. Consists of a retort with shelves, over which the material is passed by means of endless chains and finally discharged in the condition of charcoal. Also, cooler, feed and discharge-wheels, &c.

April 29th, 1884.

297,554.—Process and apparatus for the treatment of ramie and jute.—N. Arthurs.

297,568.—Composition for staining and preserving wood.—S. Cabot, Jr.

Composed of rectified creosote oil, or any of the distillates of coal tar which pass over betweeu 125° and 200° centigrade, about fifteen per cent. of finely divided pigment and about ten per cent. of drying oil.

297,603.—Apparatus for improving the fire test of petroleum and for bleaching other oils.—J. B. Huston.

The oils are made to pass through a high vertical cylinder provided with several perforated floors, by means of which they can be reduced to a finely divided state, in which state they are subjected to the action of direct live stream or bleaching material.

297,626.—Indestructible compound for coating wires for electrical purposes.—J. H. Page.

Litharge and glycerine formed into a thick paste.

297,639.—Process of manufacturing chair seats of vegetable fiber and chromic acid.—R. Shimmel.

Ground rags and vegetable fibre in equal parts, with chromic acid to make a paste which is formed into sheets and strengthened by the addition of textile fabrics and then molded and pressed into the pattern, &c., desired.

297,743.—Extraction of oils and fats from oleaginous and fatty bodies. I. A. Bang and C. A. Sanguinetti.

Consists in first reducing the substance to a finely divided state, then saturating it with a volatile deodorized product of petroleum, drawing off the free liquid, and then passing the superheated vapor of a portion of the volatile liquid through the mass in order to remove therefrom the remainder of the volatile solvent.

297,766.—Procees of preparing ozocerite and other solid hydrocarbons.—J. C. O. Chemin.

First removes the earthy portions, distils the so-purified hydrocarbon mixed with flowers of sulphur, removes the oils and lighter hydrocarbons by means of heat and pressure, fuses in a bath with amylic alcohol, cools and presses them and treats with animal charcoal while in a molten state.

297,770.—Finishing and glossing the surfaces of fabrics having a coating of some pyroxyline compound.—J. B. Edson.

Improvement on patents Nos. 289,240 and 289,242, dated Nov. 27, 1883 and No. 290,553, dated Dec. 18, 1883. Consists in passing them through a fluid acting as a solvent for the zylonite or similar material and which upon evaporation leaves the desired glossy appearance.

297,791.—Concrete compound for paving streets, walks, &c. L. Haas.

Composed of furnace slag, gravel, Portland cement, metallic screenings obtained by washing ores, glass, cinders, wood and coal ashes, Trinidad asphaltum, coal tar pitch and refuse slate for coloring matter.

297,844.—Sulphoconjugated violets of Paris.—A. F. Poirrier and D. A. Rosenstiehl.

Consists in treating the crude coloring matter with potash soda, ammonia, zinc, magnesia or other suitable base, so as to transform the excess of acid into soluble sulphate.

The produut of the described treatment is also patented.

297,848.—Process of and apparatus for defecating cane juice.—W. A. Riggs, Sr.

Consists in first boiling it as soon as it comes from the mill, removing the skimmings and in drawing off the boiled juice or sirup into suitable tanks, wherein it is treated with lime or other other alkalies.

297,852.—Manufacture of yellow and orange coloring matters.—Z. Roussin and D. A. Rosenstiehl.

Improvement in the preparation of coloring matters varying from yellow to orange, and even red, consisting in substituting the amidocarboxylated acids, such as amidobenzoic acid ($C_6 H_4 NH_2 CO_2 H$)—for the corresponding sulpho acids—such as the sulpho acid $C_6 H_4 NH_2 SO_3 H$—in the manufacture of azo-coloring matters, in the state of free acid, these coloring matters being insoluble in water, but their alkaline salts being sufficiently soluble for practical purposes.

397,888.—Furnace for smelting ores.—J. W. Webb.

297.935.—Process of desiccating pyroxyline in comminuted form. J. W. Hyatt.

Grinds the nitro cellulose in water and then removes the aqueous particles by agitating the nitrocellulose in contact with an absorbent.

297,948.—Apparatus for taking off ammonia from boneblack retorts.—F. Osmer.

Improvement on Patent No. 287,570, dated Oct. 30, 1883.

A pipe of similar cross-section as the retort extends a certain distance into the latter. The other end of the pipe is connected with a flue for conducting away the ammonia or other noxious gases. O. H. K.

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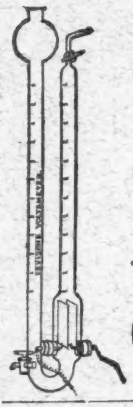

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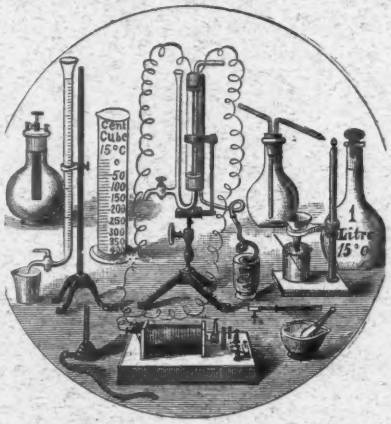

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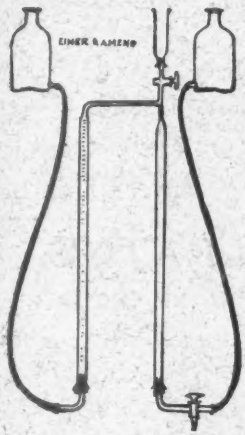

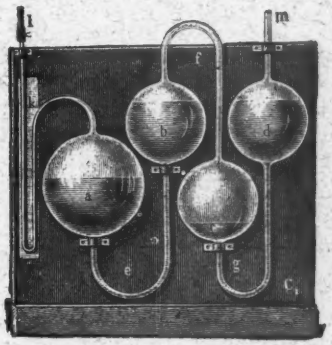

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